

2008 Carbon Sequestration Atlas of the United States and Canada – Version 2



Oil and Gas Fields

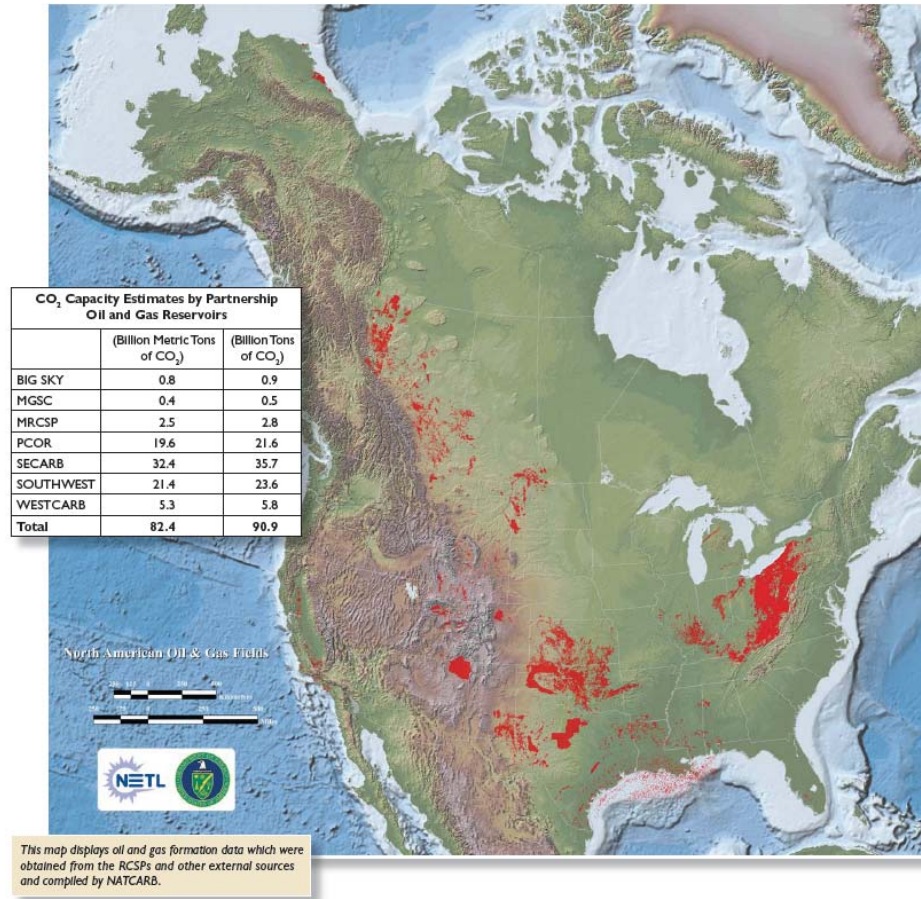
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Oil and Gas Fields

- Probable initial target location for geologic storage of CO₂
- Proven trap that holds the hydrocarbons in place
- Value added benefit CO₂ injected can recover incremental oil (10-15% of original oil in place)
- Version 1 documented the location of more than 82.4 billion metric tons (90.8 billion tons)
- Regional Scale



Oil and Gas Fields - Granularity

- **Version 1**

- *Resource estimates at various scales*
 - Partnership, state/province or field

- **Version 2**

- *Resource estimates at the oil or gas field level*
 - Well defined on technical and regulatory basis
 - Not insurmountable task in terms of data manipulation, storage and access
 - Easily summed to provide estimates at the state or partnership scales
 - Possible to cross-check estimates against readily available state/province and national production figures

Oil and Gas Fields – Other Considerations

- ***Minimum and Maximum Depths***
 - *No cutoff*
 - Cognizant of SDWA Definitions
 - TDS greater than 10,000 ppm
 - Unless specifically noted and justified
- ***Economics and Engineering***
 - *Not considered*
 - No maturity Distinction
- ***Rank scale of the assessment and type of resource***
 - *Effective Resource* (Vast Majority)
 - *Practical Resource* (Limited)

Oil and Gas Fields – Computing Resource

- **Definition**

- *Volumes of the subsurface that have hosted natural accumulations of oil and/or gas and that could, in the future, be used to store CO₂.*
 - Mapping of oil and gas formations is not required
 - *Trap, seal and porosity demonstrated*

- **Volume Replacement**

- *Volumetrics-based CO₂ storage estimate*
- *Production-based CO₂ storage estimate*

- **Storage Efficiency Factors Incorporated**

- **No Range of Resource Values Proposed**

Oil and Gas Fields – Simplifying Assumptions

- ***Not Considered (Positive Effect on Storage)***
 - *Miscibility of CO₂ into oil*
 - *Dissolution of CO₂ into residual and associated water*
 - *Mineral trapping*
 - *Pressure decline as a result of production*
- ***Not Considered (Negative Effect on Storage)***
 - imperfect inversion of processes during production
 - Effect of solution gas drive
 - Waterflooding and water drive
 - Seal compromise (Penetration or Deformation)